REMARKS

This is in response to the Office Actions dated December 8, 2003 and August 11, 2003. New claim 16 has been added. Thus, claims 1-16 are now pending.

Claim 10

Claim 10 stands rejected under 35 U.S.C. Section 103(a) as being allegedly unpatentable over Tsuzuki (apparently US 6,388,716) in view of each of Suzuki, Terasaki and Kashiyama. This 4-way Section 103(a) rejection is respectfully traversed for at least the following reasons.

Claim 10 requires "at least first, second and third separate and distinct optical sensors for measuring how the liquid crystal panel is emitting R (red), G (green), and B (blue) light, respectively, so that *R, G and B light output from the liquid crystal panel is measured independently*; a signal reading circuit for converting measurement values obtained from the optical sensors into a current brightness value of the liquid crystal panel . . . . the brightness of the liquid crystal panel is corrected by *controlling light emission of the backlight according to the measurement value obtained from the optical sensors*." In other words, Claim 10 requires first, second and third separate and distinct optical sensors for measuring how the liquid crystal panel is emitting R, G and B light, respectively, so that R, G and B light output from the panel is measured *independently*. The cited art fails to disclose or suggest this aspect of claim 10, either taken alone or in the alleged combination.

The Office Action *admits* that Tsuzuki, Suzuki and Terasaki fail to disclose or suggest this aspect of claim 10 (Office Action, pg. 9, lines 1-3). Admitting this failure of the first three references in this respect, the Office Action attempts to rely upon the newly cited Kashiyama reference. However, Kashiyama also fails to disclose or suggest this aspect of claim 10. In particular, the RGB sensor 311 in Fig. 22 of Kashiyama which measures R, G and B light is measuring *incoming* "photographing light" which passes through plate 312 – *not* light emitted from display 308. Kashiyama's sensor 311 is entirely unrelated to display 308, and does not measure any output thereof.

Thus, it can be seen that no cited reference discloses or suggests separately measuring R, G and B light output from an LCD in order to control the backlight thereof as required by claim 10. Even if the cited references were combined as alleged in the Office Action (which applicant believes would be incorrect in any event), the invention of claim 10 still would not be met.

Additionally, according to the technique of Kashiyama, *incoming* ambient light at the time of shooting is measured to determine the type of light source (e.g., natural, tungsten, or fluorescent light) under which the shooting is performed. In contrast, according to certain example embodiments of this invention, the *output* of an LCD panel is measured to control, by use of individual light reception outputs of optical sensors 2R, 2G and 2B, the brightness and chromaticity of the LCD panel. Thus, the object of the invention is entirely different and unrelated to those of Kashiyama. While Kashiyama takes the ambient light as a target of measurement, the invention of claim 10 is entirely

unrelated to ambient light. No one of ordinary skill in the art would be motivated to apply the technique of Kashiyama to base reference Tsuzuki for similar reasons. None of the other cited references disclose or suggest anything concerning measuring R, G and B individually or controlling brightness and/or chromaticity of an LCD panel based on thus obtained individual light reception outputs. Clearly, the art of record fails to disclose or suggest the invention of claim 10.

Furthermore, the Section 103(a) combination of the four references is also incorrect for the following additional reason. The detection optical sensors in Tsuzuki sense not only the brightness of, for example, green color from green pixels they are in front of, but also the brightness of blue and red light. This is because no color filter has perfect optical cut-off characteristics. Thus, a green pixel with a green color filter emits not only green light, but also red and blue light. This is also true with red and blue colored pixels. Thus, it cannot be said that the an optical sensor in Tsuzuki located in front of a green pixel independently measures or detects green light. Moreover, electrical crosstalk between channels also tends to prevent color independence in certain situations. For example, when a driver voltage on a R channel is varied, the parasitic coupling may cause voltages on the G and B channels to be affected. Accordingly, it can be seen in view of the above that independent color measurement is not obtained in Tsuzuki. On the other hand, claim 10 calls for *independent* measuring of the R, G and B light output from the display panel. According to certain example embodiments of this invention, sensor outputs are obtained by collectively and simultaneously sensing brightness of R, G and B

components. Even when the cut-off characteristics of the color filters are unsatisfactory, the sensed light is divided into the desired R, G and B components by the use of sensors so that the R, G and B components can indeed be measured independently unlike in the cited art. Moreover, instead of controlling each channel independently, the backlight is controlled. Again, it can be seen that the cited art fails to disclose or suggest independently measuring R, G and B light output from the liquid crystal panel as required by claim 10.

Claims 1 and 12

Claim 1 requires "at least one optical sensor for measuring how the liquid crystal panel is emitting R (red), G (green), and B (blue) light, wherein the *R, G and B light emitted by the liquid crystal panel are measured independently from one another* by the at least one optical sensor." As explained above, no cited reference discloses or suggests separately measuring R, G and B light output from an LCD in order to control the backlight thereof as required by claim 1. The cited art is entirely devoid of this feature.

Claim 12 requires "at least one sensor for measuring how red (R), green (G) and blue (B) light is emitted from the display panel, wherein *R, G and B light emitted from the display panel are measured by the at least one sensor independently from one another.*" As explained above, no cited reference discloses or suggests separately measuring R, G and B light output from an LCD in order to control the backlight thereof as required by claim 12 in this respect.

Conclusion

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____
Joseph A. Rhoa
Reg. No. 37,515

JAR:caj
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100